Central Puget Sound Initiative
Task Group 3 ~ Tools and Early Actions
Revised Draft September 24, 2002

Water Management Tools

(Actions shown in "**bold**" text in the third column are suggested recommendations for near-term action. Actions shown with a question mark (?) are other ideas suggested by the group.)

WATER MANAGEMENT TOOLS	IMPEDIMENTS TO USE OF THE TOOL	ACTIONS NEEDED TO MAKE TOOL MORE USEFUL IN CENTRAL PUGET SOUND
Interties -- a pipeline connection between two independent water systems that allows water to be moved between the systems. Through the installation of a piped connection between two water utilities or multiple water systems, the system with excess water supply would be able to transfer water to the system in need. This allows the sharing of water resources between two or more systems in order to meet water demands for communities and/or site specific environmental projects. Interties can provide backup and redundant supply, or may deliver a primary source of supply. By law, interties for emergency and emergent needs are addressed differently than permanent interties.	Existing state law does not allow the use of interties for "development of new sources of supply to meet future demand." This has been interpreted to mean that interties cannot be used to serve future growth. Legal issues related to the authorized place of use of existing water rights can limit the use of interties. Interties that allow increased use of water can raise environmental concerns (e.g., reduced stream flows in the source of the intertie supply). Temporary interties can raise concerns about the potential for "stranded communities," where the receiving system lacks a source of supply once the intertie source is turned off. Blending of different water sources can raise public concerns regarding differences in drinking water quality.	**Amend the water code to allow interties to develop new sources of supply to serve future demand and to meet environmental needs**. Develop a regional policy to allow interties to serve growth where they do not result in development of a new source of supply? Develop a regional program to ensure a reliable and acceptable source of water in the event a community becomes stranded due to the loss of an intertie supply?

Source Exchange -- the substitution of a source of water with another source to reduce environmental impacts, to replace a poor quality source, or to increase reliability. Water from one source (e.g., surface water from a reservoir or a lower impact groundwater source) is used to substitute for another source (e.g., ground water connected to a tributary stream or a higher impact stream diversion) to reduce environmental impacts and/or to meet key water needs of communities.	Costs for purchasing and delivering the new source can be significant, particularly if current source investment needs to be abandoned. Source substitution will be controversial if customer rates need to be raised. Replacing different water sources can raise public concerns regarding differences in drinking water quality. Legal issues with using the new source (e.g., restrictions on place of use in the existing water rights) can inhibit source exchange. If needed, securing new water rights to implement a source exchange would be difficult. Loss of autonomy for the receiving system can be an impediment to reaching agreement on source exchange.	**Amend the water code to clearly allow flexibility in the authorized place of use of existing water rights where the benefits of source exchange can be demonstrated and secured.** Develop improved models for water supplies involved in source exchange projects to better understand and manage these sources?
Storage-- the capture and storage of water for recovery and use at a later time when it is needed for communities and/or the environment. Storage can occur above ground in reservoirs (on channel or off channel) or below ground in aquifers. The source of water to be stored could be from streams, ground water, stormwater, reclaimed water, rainwater, etc.	Storage projects typically require a long time to plan and implement. They usually require a significant review and approval process through multiple agencies, including studies, engineering design and permitting. Accordingly, transaction costs for storage projects are usually high. Above ground storage is expensive to construct. Storage projects can not be built everywhere – they require	**Create a coordinated or consolidated process to ensure efficient permitting of storage projects.** **Create a WRIA-level process to evaluate storage needs and identify potential projects within the region.** Pursue demonstration projects for aquifer storage and recovery? Establish procedures to request review of changes to operations

	specific topographic and geological features and/or specific hydrogeological attributes. Traditional on-channel reservoir storage projects are highly controversial due to stream impacts. The environmental implications of capturing and storing high flows (or flood flows) are not well known. Changes to the operation of existing storage facilities may require agreement from the federal agency managers. Water quality issues must be addressed when introducing water into an existing aquifer.	of storage facilities managed by federal agencies, and to better coordinate related water management programs?
New Source Development – securing water from a new source of supply through surface diversion or ground water withdrawal. This is the traditional method for obtaining water supplies for off stream use.	Sources with water available for new appropriation are limited. Many sources in Central Puget Sound are closed to new appropriations. Even when new water might be available, water rights for a new source are difficult to obtain. Mitigation requirements for new water sources are not defined or established. While new ground water sources are less controversial than new surface water sources, the potential effect of well withdrawals on stream flows is complex to ascertain and difficult to address.	**Establish a new, regional process for prioritizing and expediting decisions on new water rights, where they support the regional water management framework and can meet the statutory requirements for new rights.** Process the backlog of applications for new water rights, in order to determine whether and where new water is available for appropriation? Develop clear mitigation guidelines for new source development? Develop guidelines to help decide when the water supply needs warrant issuance of new rights?

Conjunctive use of multiple sources -- management of multiple water sources in a coordinated operation that results in better yield than the independent use of the same sources.	Legal issues with the sources (e.g., restrictions on place of use in the existing water rights) can inhibit conjunctive use. Using multiple water sources can raise public concerns regarding differences in drinking water quality. Differing utility values and loss of autonomy may prevent agreements from being concluded.	**Allow changes to existing water rights to create overlapping places of use for conjunctive use of multiple sources.** **Allow changes of existing ground water rights from one aquifer to a different aquifer.** Allow flexibility to secure authorized water supplies from different sources in any given year, perhaps with a multi-year accounting system?
Aquifer recharge/natural storage – adding water to an aquifer through infiltration or injection to restore, maintain or enhance the aquifer's contribution to stream base flows and/or well withdrawals. *(NOTE: As used here, aquifer recharge is distinct from aquifer storage and recovery, which is addressed under "storage" above.)*	Without a specific recovery element and specific ownership of the water being added to an aquifer, it can be difficult to find the funding to study and implement aquifer recharge projects, or to secure the recharge water. Aquifer recharge projects require locations with specific hydrogeological attributes. Water quality issues and related public concerns can arise with injection of water into an aquifer.	**Develop better models to evaluate the benefits and impacts of aquifer recharge project proposals**. Create a coordinated or consolidated process to ensure efficient permitting of aquifer recharge projects?
Water conservation – an increase in efficiency of water use, or a reduction in water use. Conservation is typically expressed as a reduction in gallons used per connection over a period of time. The related concept of efficiency is a measure of water lost through the transmission system as	As the lead agency for water conservation in public water systems, Department of Health has limited authority and few resources to ensure that utilities use water in more efficient ways. Smaller utilities don't have the economies of scale to implement programs that can reduce water consumption levels.	**Resolve the use it or lose it "disincentive" hanging over water utilities and others being called upon to implement conservation programs.** **Require utilities to report annually to DOH on their water efficiency, i.e., percent of unaccounted for water, expenditures on leak detection and repair, expenditures/staff**

unaccounted for water. Conservation can be accomplished through voluntary actions, with or without organized programs or incentives. It can also be accomplished through regulatory requirements. (Where conservation is achieved by mandatory water restrictions, it is referred to as "curtailment.") Examples of conservation include installing and using water efficient equipment (for water delivery and/or end uses), and changes in use for non-essential activities (e.g., lawn watering).	Some local governments and communities require or establish Codes, Covenants, and Restrictions (CC&Rs) that increase the need for irrigation. The "use it or lose it" requirement of water law can create a disincentive to efficient water use. While there are standards for toilet tank size, there are no industry ratings for quality of product effectiveness. Many utilities have no process or expertise for collection of data and analysis related to evaluation of various conservation measures Establishment of rate structures that promote efficient use of water can adversely affect utility revenues, at least in the short term. While utilities are currently required to implement cost effective conservation measures, there is no standard definition of "cost-effective." Many water utilities do not have the jurisdiction or authority to require efficient use of water.	**time on conservation measures, conservation activities done in the year, etc. The state of Texas implemented this program.** **Fund a regional entity to provide technical assistance, to document performance of conservation methods and technologies, and to document industry efficiency ratings for water conservation equipment.** **Develop guidelines for determining when certain conservation methods would be "cost effective" under DOH rules.** Provide DOH the necessary authority and resources via the state legislature to establish region-specific water conservation requirements? *(One approach to developing these regional requirements would be to charge DOH to establish a work group to develop recommendations for water conservation performance requirements for various water uses supplied by public water systems in Central Puget Sound. The work group would include representatives of a wide range of public water systems, and other groups interested in and affected by water management in the region. The purpose of the performance requirements would be to provide a means by which a public water system can judge the effectiveness of its*

		own conservation and efficiency programs and its own progress in improving the efficient use of its water. To this end, the requirements must, to the maximum extent practicable, vary according to size of system, expected rate of population growth, customer base demographics, conservation already accomplished within a system, scope of authority and jurisdiction of the utility, regional climate variations, and instream flow conditions in related water sources. The work group must also establish criteria for identifying which requirements apply to particular water systems and describe how the performance requirements may be used in water demand forecasting, public water system planning, evaluating proposed transfers, changes, and amendments to existing water rights, and assessing whether new water rights are needed.) Develop better models for forecasting the future contribution to water supply that will be derived from water conservation programs? Amend state and federal loan and grant programs to provide additional funds and improved loan terms for those water utilities that meet regional water conservation requirements? Work with local governments and the landscape industry to

		establish a landscape template that encourages sustainable outdoor water use in growing communities? Invest in a regional public education program to more actively promote water conservation (e.g., native plantings)? Develop standard methods to evaluate conservation progress (e.g., baseline information and data collection for consumption measurement)? Develop and distribute information on approaches to revenue collection that enable conservation planning? Establish a matching funds program for utilities and their partners to implement pilot projects, and for doing research on water conservation technologies?
Reclaimed water - effluent derived from a wastewater treatment system that has been adequately and reliably treated, so that as a result of that treatment, it is suitable for a beneficial use or a controlled use that would not otherwise occur and is no longer considered wastewater. All of the current applications being considered are for non-potable uses.	Water system plans are not required to address the potential for alternative sources of supply such as reclaimed water. The cost of reclaimed water is generally more that potable or waters of the state (treatment and separate delivery). The absence of any mechanism to distribute the costs of providing reclaimed water to users is a constraint. There is no standard method for evaluating the cost effectiveness of reclaimed water (to compare reuse to	**Amend DOH rules (WAC 246-100) to require water supply plans to evaluate reclaimed water as an alternative source of supply for nonpotable uses.** Conduct research on the effects of reclaimed water trace organics on fish? Require evaluation of reclaimed water for non-potable water uses such as irrigation for parks, golf courses, and cemeteries to use as soon as reclaimed water is available?

The source of the wastewater can include municipal and/or industrial wastewater streams. Though the term "reclaimed" is usually associated with wastewater from a sewage treatment system, for the purpose of this matrix, it includes reclaimed water from sources that do not include sewage.	other sources of supply). There are few data on the effects of trace constituents in reclaimed water on salmon; additional data are needed to help evaluate the use of reclaimed water for stream flow augmentation. Public controversy over water quality can surface with the use of reclaimed water.	Evaluate cost effectiveness, impacts and cost benefits of the required installation of new transmission systems for reclaimed water, considering the full costs of alternative sources of supply and of wastewater treatment requirements? Make creative use of water rights acquisition program to leverage funding and substitute reclaimed water for other water when possible? Modify existing state funding programs to set aside a portion of existing funding (e.g, PWTF) for reclaimed water? Initiate development of statewide professional association promoting reclaimed water?
Stormwater management – managing runoff and storm flows in a manner that contributes to aquifer and stream preservation and enhances water supplies, while protecting public health and safety, and meeting water quality objectives.	Recent case law has made it unclear whether stormwater can be managed to result in additional benefits without also securing a water right for these benefits. Variable stormwater flows usually require larger infrastructure and result in high costs. Existing state agency programs do not connect stormwater plans and requirements with instream flow preservation.	**Clarify that stormwater can be put to beneficial use for certain uses and quantities without the need for a water right permit**. **Develop technical guidance for managing stormwater to preserve and enhance water supplies (both instream and out of stream). (Add this additional information to the existing guidance manual.)**
Rainwater harvest – the capture and use of rainwater for a beneficial purpose.	Rainwater can be considered "waters of the state" that would technically require a water right permit for any rainwater collection system that would	**Enact legislation to exempt roof top collection and use of rainwater. Exempt other rainwater harvest up to a specific size.**

Rainwater collection and use can occur on small (e.g., a household garden rain barrel), medium (e.g., a commercial cistern) or large scales (e.g., a reservoir for industrial use). At the largest scale, rainwater harvest is no different than the beneficial use of stormwater.	put the water to beneficial use. If this were enforced, it would act as a major disincentive. Local boards of health have expressed public health concerns with introducing rainwater into a residential home. Capture and separate delivery infrastructure for rainwater harvest can result in higher costs than traditional sources of supply (if they are available.) In some cases, rainwater harvest can intercept water that would have recharged an aquifer, flowed into a stream, or be destined for an established storage facility. As a result, large rainwater harvest systems could affect the existing water budget in a subbasin. Along coastal areas with salt water intrusion problems, large scale rainwater harvest can raise questions about the potential for increased intrusion as a result of reduced ground water recharge.	Ask WRIA planning groups to evaluate rainwater harvest in the context of the overall watershed budget? Develop and distribute a cost effectiveness model for rainwater harvest to help local governments and utilities evaluate the tradeoffs for water supply, stormwater management, wastewater treatment, etc? Also distribute information on the benefits and impacts to streamflow and aquifer recharge? Develop design standards to address public health concerns and local government building requirements with rainwater harvest? (E.g., address how rainwater harvest could work where gutters are not allowed to connect to sewers.)? Document and evaluate existing uses of rainwater harvest in Washington?
Instream flow rules – rules adopted to appropriate water to protect and preserve instream resources and values. They have the legal standing of a water right, usually with a priority date established at the time of adoption of the rule.	There is substantial disagreement on the technical methods and policy objectives for setting instream flows. There is limited experience with the use of instream flow rules to establish restoration objectives and to implement restoration programs.	**Develop guidance to clarify the technical methods and policy objectives for setting instream flows.** **Conduct a pilot instream flow program that is performance based, reflecting incremental progress towards streamflow objectives that are biologically defensible and hydrologically**

Instream flow rules provide a legal basis for managing any future new appropriations of water, and can serve as a planning objective for environmental restoration programs (e.g., salmon recovery).	The relationship of instream flow rules to instream rights recognized or claimed by tribal governments is not clear. Instream flow rules are controversial and difficult to adopt and implement without broad local support. Policies and technical methods for setting instream flows remain unsettled. The technical difficulty in linking the use of ground water to surface water stream flows often inhibits agreement on instream flows.	**achievable.** Identify appropriate local forums to provide advice and support for development of instream flow rules? Provide state funding for locally-based efforts to develop instream flows?
Trust water rights – existing water rights that have been changed and left in the stream for instream and/or future off stream uses. Trust rights can be acquired by purchase, lease or donation. Trust water rights are held in trust by the state, and may be temporary or permanent. While in trust, these rights do not relinquish.	There is limited funding to purchase trust rights. There are limited resources to protect trust water rights once they are in the stream. Trust rights are controversial where they displace an existing activity (e.g., an agricultural irrigation use). While trust rights can be established using conserved/ saved water, there are other competing needs for this water (e.g., municipal). There is disagreement on the streamflow objectives for many streams. The law is not clear on whether or when ground water rights can be placed in the trust water right program.	Establish streamflow restoration targets for all critical reaches and important streams? Clarify the use of the trust water rights program for ground water rights? Require that a portion of the saved water from conservation projects that are funded by public resources be dedicated to instream flows?

Streamflow augmentation – increasing streamflow through discharge of water to the stream (e.g., from a reservoir (surface or aquifer) or from a pipe), reduced diversions, and/or changes to existing conveyance systems that benefit stream reaches. Typically augmentation programs are conducted for specific periods of time during fish critical and/or low flow periods of time.	There is disagreement on the streamflow objectives for many streams. Some streamflow problems are due to land use and can not be easily remedied solely through changes in water management. Differences in water quality from different sources can raise concerns about confusing fish and impairing migration.	Establish streamflow targets for all critical reaches and important streams? Fund research on the potential effects of mixed source water quality on fish migration? Amend the water code to declare that environmental uses are an authorized use of water under municipal water supply purpose water rights?
Low impact development - an ecologically friendly approach to land development and stormwater management designed to reduce impacts on watershed hydrology and aquatic resources. Low impact development can include one or more of the following practices: <u>Disconnectivity</u> – the practice of directing runoff from impervious areas, such as roofs, roads, parking lots, onto vegetated areas to reduce the volume of runoff, encourage groundwater recharge and reduce the temperature of runoff <u>Bioretention</u> – specialized landscaped areas used to filter and store runoff and promote groundwater recharge through	Many of the individual LID tools require institutional change or changes in various codes before they can be implemented. Developers may be hesitant to use LID because of actual or perceived increased in costs and potential violation of existing building standards. Municipal codes may require a change to allow narrower roads or the concurrence of fire protection services.	Conduct one or more pilot programs to demonstrate the feasibility, benefits and costs of low impact development?

infiltration. Permeable pavements – pavement blocks, porous concrete or porous asphalt that lets water flow to an underground gravel area where water can be slowly released to the soil. Open swales – grassy or vegetated areas, often at the edges of parking lots that receive runoff, that promote infiltration and treat pollutants. Vegetated ("green") roofs – a combination of specialized planting media and vegetation that helps filter pollutants, store runoff and reduce energy costs. Tree filter boxes – container bioretention areas that use soil and crushed stone to store and slow down runoff and filter out pollutants. Narrower roads and sidewalk – use of narrower roads and sidewalks to reduce the impervious surface and thereby reduce the volume and slow down runoff. Specialized inlets – storm drain inlets that prevent the inflow of trash and debris or can store and retain storm water to change the timing of runoff into the		

storm drain system.		
Desalination – use of newer technology to treat brackish water and desalinate seawater to provide a new source of supply. Desalination plants are usually located in urban areas next to bodies of salt water.	Costs to desalinate water ($1.30 to $2.30 per 1000 gallons for brackish water) are still higher than other sources of supply. The taste of treated water may be inferior to other sources. High saline waste stream can require blending with other freshwater waste streams prior to discharge.	Conduct a review of current desalination technologies and evaluate the feasibility of a small scale demonstration and research project? Document and evaluate the current use of desalination in Washington?
Information management – managing information on water needs (to meet current and future out of stream uses, and to support instream resources) and on water supplies to meet those needs (supplies in use, available today but not in use, and planned for the future). Information tools include: data systems, new types of information and information gathering methods (e.g., remote sensing), models for water sources, models for fish needs, etc.	Existing data are not readily accessible to all parties. Some data are not shared, and integration may be prevented by data formats. Investments are usually made on data systems for a specific entity and their own needs, with less attention on data access and integration. There are significant data gaps on instream needs. There are other data gaps regarding certain water sources. Investments in new types of information, and new models, are often beyond the financial capacity of a single entity. There is limited coordination of existing financial investments. Additional funding is needed to gather missing information. State and local agencies are not fully aware of their respective information gathering and data management programs.	**Develop a regional approach for collecting, evaluating, and producing information based on data, feeding an adaptive management program.** Invest in existing and new data systems that are integrated and accessible, and to ensure that these systems provide current data? Invest in new types of information to evaluate use of new tools to improve water management (i.e., remote sensing)? Develop better models for how water sources work and how they can be used effectively? Develop better models to understand and predict the water habitat requirements of fish?

Regulatory actions – review and approval of water programs and projects by state and local regulatory agencies, as required by state and local agency rules. These actions are required before a water management program or project can be implemented, or for a program or project to continue. Regulatory action tools include: planning requirements, procedures and criteria for review and approval of water projects, permits, compliance programs, etc.	Most permit programs are implemented separately in different agencies. Permits are often not fully coordinated in time or substance. As a result, there are many places where conflicting requirements can surface, requiring back tracking. Some of these issues are rooted in the legal framework of the state statute. Many regulatory actions are aimed at the project level, and often surface issues that could have been more efficiently addressed at earlier plan or program development stages. There are no easy mechanisms for expediting priority projects (and no agreement on how to define priorities). Regulatory staffing resources are limited, resulting in limited technical assistance, permitting delays, and minimal compliance programs. Political support for water compliance programs is limited.	**Develop and adopt region-wide criteria for review of water projects. Establish criteria for identifying priority, regional water projects, and establish dedicated staffing for review and permitting of these projects. This could involve new procedures for expedited review of select projects.** **Establish procedures for interagency (including state and local) coordination of project review and permitting.** **As a means to implement approved regional and watershed plans, adopt "permits by rule" for certain types of water projects Establish general permits for certain types of water projects. Permit a series of related water projects through a programmatic approval.** Establish efficient procedures for conflict resolution? Establish a regionally-based compliance assurance program? Improve existing procedures for coordinated regional planning for water management actions? Establish a nominal annual fee for all water rights as a means to identify who has them, if they are still being used or are needed, and to provide a funding stream that could be

		dedicated to data management? Though the fee could be volume based, a flat, tiered fee approach would be less controversial? A program along the lines of the corporate registration program that the Secretary of State runs, where failure to respond on an annual basis would lead to the assumption that the right has been abandoned?
Policy framework – the legal framework of procedures and requirements that affect whether and how a water program or project is implemented. Policy framework tools include: statutory laws, state agency rules, tribal government rules, local government ordinances, and adopted policies, standards and guidelines.	Many statutes and rules specify procedures or requirements that can limit the ability to implement regional solutions to water management, even when these solutions are broadly supported. Statutes are difficult to change. Many statutes are subject to conflicting interpretation. Many statutes were enacted to address specific issues at specific times. Rules and ordinances require time and effort to amend. Many rules and ordinances were designed to look at specific issues during project review, and were not designed to address review and approval of regional programs and multi-purpose projects. There are significant water management issues for which standards and guidelines do not exist.	**Enact a new or amended law to provide a legal framework for addressing water management at a regional scale.** Adopt new or amended rules and ordinances that establish procedures and requirements for review and approval of water plans, programs and projects at a regional scale? Establish new standards and guidelines for water management activities to be conducted within a region?
Governance – the assigned roles and responsibilities for water management decisions.	Most entities have a relatively narrow role for water management decisions, and decision and implementation	**Create a shared decision framework for regional water management decisions in Central Puget Sound.**

Governance tools include: organizations and entities responsible for water management, and the definition of their roles; procedures and agreements for intergovernmental, interagency and interlocal coordination; procedures for decisionmaking; ; etc.	responsibilities are divided among many entities. This allows for robust evaluations of specific interests and issues. However, it does readily support decision making at a regional scale. There are overlaps in the responsibilities of different entities. Procedures for coordinated or consolidated decision making are missing for some types of water management decisions. Effective procedures for coordination are missing between different layers of government and between different government entities.	Clarify, reconcile, and/or better distinguish the roles of existing entities? Establish a process for intergovernmental coordination, including tribal coordination? Establish efficient procedures for conflict resolution? Establish new roles for existing entities? Create a new entity for regional management of water use and instream flows?
Public role – the process by which the general and affected public participates, and how the public's view is determined and considered, in water management decisions. Public role tools include: education, public participation, procedures for the role of affected parties in decisions, etc.	The general public is not well informed about water management needs, issues and tradeoffs. Many elected officials face a similar challenge. It is difficult to determine the public's view, or to gauge public support and opposition for a water management proposal. The process by which affected parties influence water management decisions is not always clear. At times, affected parties are not effectively involved in the decision. At other times, select affected parties may dominate the decision process.	Establish a regional public education program for water management? Produce and distribute education materials? Conduct routine briefings and offer short courses for elected officials? Establish procedures and provide technical support to ensure effective public participation in water management decisions? Define due process procedures for affected parties. Provide opportunities for mediated conflict resolution prior to judicial challenges? Adopt criteria for defining the public interest in water

	Localized issues often obscure the consideration of regional needs.	management decisions for Central Puget Sound?
Information gaps – the process by which water management information needs are identified and addressed, and how decisions address what is not known today. Information gap tools include: procedures to identify information gaps, studies to fill information gaps, demonstration projects, risk analysis and risk management, review/evaluation procedures for existing water management programs, etc.	There is no broadly accepted or applied method for identifying, evaluating and prioritizing information gaps. Some information gaps can be filled with existing information. However, this opportunity is impeded by inaccessible data, poor information exchange, and lack of broad agreement on whether, when and how to apply existing data to perceived information gaps. There is no broad agreement on how to determine the extent or rigor of information needed to support a water management decision. Funding for studies to fill information gaps is limited, and is usually dedicated to a specific project rather than to a regional evaluation. There is no broadly accepted or applied method for evaluating and communicating the effect of information gaps on water management decision, or for creating decisions that will require or accommodate new information. Investment in monitoring, evaluation of past projects, and communicating lessons learned is limited.	**Establish a review program to identify and prioritize information gaps for regional water management.** Work with the WRIA groups to develop technical guidelines on how to develop and implement an adaptive management process for water resource management? Establish a cooperative program to evaluate water management information gaps at a regional scale, and to advocate for and sponsor needed studies? Create research center(s) to develop and test new methods? Conduct pilot projects, coupled with a robust learning and information exchange system?

Financing and funding – methods for financing and sources of funds to implement water management programs and projects. Financing and funding tools include: fees from ratepayers (ongoing or one-time assessments), public funding programs (fees, taxes, operating appropriations, grants and loans, revenue sharing, etc.), financing support programs, etc.	Funding available for water management programs is limited. Funding available from user fees is constrained by the will of the ratepayers. Funding available from taxes and fees is constrained by the will of the general public. Investments are often made in the context of specific, local needs. It is difficult to finance a water management effort at the regional scale. It is difficult to secure funding for the "general good." It is easier to secure funding to "build something" than to ensure funding for long-term operations and for operating programs. Many smaller water systems have struggled with the financing to keep their infrastructure intact and up to date. Public funding for needed water infrastructure has significantly dwindled over the last decade (i.e., the funding gap has grown). Opportunities to connect specific local needs with available public funding are sometimes missed (especially federal funding).	**Secure new revenue to invest in water infrastructure for projects including, but not limited to:** ✓ **public health and small failing water systems** ✓ **environmental needs** ✓ **economic revitalization** ✓ **source exchanges that result in an environmental benefit** ✓ **multipurpose water storage projects** ✓ **aquifer recharge projects that provide environmental benefits** ✓ **match funding to support streamflow augmentation projects** ✓ **etc.** **Link state funding efforts to local/regional priorities and plans; facilitate development of regional funding mechanism to address multiple water needs.** Consolidate related programs and their funding to optimize the regional investment in water management? Establish a clearinghouse to support financing of water management programs and projects? This entity could provide technical assistance and serve as a bridge to financing and funding opportunities? Create a technical, policy and political support program to help utilities determine and implement fair and adequate rates?

		Dedicate a larger share of existing revenues and funds (state and local) to water management issues at the regional scale?